Amendments to the Claims

The following listing of the claims will replace all prior versions, and listings of the claims in the application:

Listing of Claims

1-21   Canceled

22. (Currently amended) A method for implementing a class of NxN upturned decompressors each serving a connection request to route m incoming signals, m<N, and for enabling the service of any connection request in a nonblocking way on the condition that the connection request is compliant to certain constraints, the method for each of the upturned decompressors comprising:

configuring a switch defined by a set of connection states and having an array of N input ports with N distinct input addresses and an array of N output ports with N distinct output addresses wherein the m incoming signals arrive at m distinct input ports determining m active input addresses and are destined for corresponding m distinct output ports determining m active output addresses, and wherein said constraints on the connection request are that: (1) the m active input addresses are consecutive upon a rotation of the ordering of the N input addresses, and (2) the correspondence between the m active input addresses and the m active output addresses is order reversing after the rotation, and

routing the incoming signals from the m distinct input ports to the corresponding m distinct output ports by activating one of the connection states such that the activated one of the connection states accommodates the connection request subject to said constraints on the connection request.

23. (Previously presented) The method as recited in claim 22 wherein the configuring includes constructing the switch as an NxN k-stage switching network composed of k stages of

nodes, an interstage exchange between any succeeding two of the k stages, an input exchange and an output exchange, and wherein each node is filled with another switch.

24. (Previously presented) The method as recited in claim 22 wherein the configuring includes constructing the switch as an NxN k-stage switching network composed of k stages of nodes, an interstage exchange between any succeeding two of the k stages, an input exchange and an output exchange, and wherein each node is filled with an upturned decompressor.

25. (Previously presented) The method as recited in claim 22 wherein the configuring includes constructing the switch as a two-stage interconnection network composed of a first stage of nodes being the input nodes and a second stage of nodes being the output nodes, an interstage exchange, and an input exchange corresponding to the interstage exchange prepended to the network, and wherein each node is filled with an upturned decompressor.

26. (Previously presented) The method as recited in claim 22 wherein the configuring includes constructing the switch as an x2 interconnection network having nodes and wherein each node is filled with an upturned decompressor.

27. (Previously presented) The method as recited in claim 22 wherein the configuring includes constructing the switch as an x2 interconnection network having nodes and wherein the nodes are filled with a plurality of upturned decompressors.

28. (Previously presented) The method as recited in claim 22 wherein the configuring includes constructing the switch as a recursive x2 interconnection network having nodes and wherein each node is filled with an upturned decompressor.

29. (Previously presented) The method as recited in claim 22 wherein the configuring includes constructing the switch as a recursive x2 interconnection network having nodes and wherein the nodes are filled with a plurality of upturned decompressors.

30. (Previously presented) The method as recited in claim 22 wherein the configuring includes constructing the switch as a recursive x2 interconnection network having nodes and wherein each of the nodes is a cell and each cell is filled with a 2x2 upturned decompressor.

31. (Previously presented) The method as recited in claim 30 wherein the 2x2 upturned decompressor is a switching cell.

32. (Previously presented) The method as recited in claim 22 wherein the configuring includes constructing the switch as a recursive x2 interconnection network of cells with each cell filled with a 2x2 upturned decompressor.

33. (Previously presented) The method as recited in claim 32 wherein the 2x2 upturned decompressor is a switching cell.

34. (Previously presented) The method as recited in claim 22 wherein the configuring includes constructing the switch as a banyan-type network whose trace and guide are both monotonically increasing and wherein each of the 2x2 nodes of the banyan-type network is filled with a 2x2 upturned decompressor.

35. (Currently amended) The method as recited in ~~claims from~~ <u>claim</u> 34 wherein the 2x2 upturned Decompressor is a switching cell.

36. (Previously presented) The method as recited in claim 22 wherein the configuring includes constructing the switch as a recursive plain 2-stage interconnection network of cells prepended with a swap exchange and wherein each cell of the network is filled with a 2x2 upturned decompressor.

37. (Previously presented) The method as recited in claim 36 wherein the 2x2 upturned decompressor is a switching cell.

38. (Previously presented) The method as recited in claim 22 wherein the configuring includes constructing the switch as a divide-and-conquer network of cells prepended with a swap exchange and wherein each cell of the network is filled with a 2x2 upturned decompressor.

39. (Currently amended) A class of NxN upturned decompressors each serving a connection request to route m incoming signals, m<N, and for enabling the service of any connection request in a nonblocking way on the condition that the connection request is compliant to certain constraints, each of the upturned decompressors comprising:

a switch defined by a set of connection states and having an array of N input ports with N distinct input addresses and an array of N output ports with N distinct output addresses wherein the m incoming signals arrive at m distinct input ports determining m active input addresses and are destined for corresponding m distinct output ports determining m active output addresses, and wherein said constraints on the connection request are that: (1) the m active input addresses are consecutive upon a rotation of the ordering of the N input addresses, and (2) the correspondence between the m active input addresses and the m active output addresses is order reversing after the rotation, and

control circuitry, coupled to the switch, for routing the incoming signals from the m distinct input ports to the corresponding m distinct output ports by activating one of the connection states such that the activated one of the connection states accommodates the connection request subject to said constraints on the connection request.

40. (Previously presented) The upturned decompressor as recited in claim 39 wherein the switch is constructed by an NxN k-stage switching network composed of k stages of nodes, an interstage exchange between any succeeding two of the k stages, an input exchange and an output exchange, and wherein each node is filled with another switch.

41. (Previously presented) The upturned decompressor as recited in claim 39 wherein the switch is constructed by an NxN k-stage switching network composed of k stages of nodes, an interstage exchange between any succeeding two of the k stages, an input exchange and an output exchange, and wherein each node is filled with another upturned decompressor.

42. (Previously presented) The upturned decompressor as recited in claim 39 wherein the switch is constructed from a two-stage interconnection network composed of a first stage of nodes being the input nodes and a second stage of nodes being the output nodes, an interstage exchange, and an input exchange corresponding to the interstage exchange prepended to the network, and wherein each node is filled with another upturned decompressor.